Iowa Science Teachers Journal

Volume 29 | Number 1 Article 4

1992

Lakeside Laboratory: A Unique Learning Opportunity for Science Teachers

John Stiles
University of Iowa

LAKESIDE LABORATORY: A UNIQUE LEARNING OPPORTUNITY FOR SCIENCE TEACHERS

John Stiles
Science Education Center
450 Van Allen Hall
University of Iowa
Iowa City, Iowa 52242

In northwest Iowa, tucked away along the shores of West Lake Okoboji, is a unique biological research and teaching facility managed by the Iowa State Board of Regents. On a typical summer day, 60 or so researchers and students spend hours collecting data at a dozen sites in at least seven areas of research. Much of this activity goes unnoticed by the steady stream of vacationers driving or floating by who learn of this quiet place only by virtue of a wrong turn or an overheard conversation.

Most of the students at Lakeside Laboratory come from the three state universities, but persons currently teaching science may gain valuable experience by taking a course there. Lakeside Lab offers its students unique, interdisciplinary opportunities to broaden their knowledge of interesting and relevant subjects. More importantly, participants become involved in science at its most basic level by designing and conducting studies in new areas of inquiry. This experience results in a fresh appreciation for the basic processes of science which teachers carry back to the classrooms and convey to their students.

Lakeside Laboratory has been in existence since 1909, when Thomas MacBride (with the assistance of Samuel Calvin and Bohumil Shimek) convinced the University of Iowa's Alumni Association to purchase five acres of an uncontaminated natural site on the shores of West Lake Okoboji (Zieglowsky 1985). The original purpose of the facility was to provide a place for researchers and biology students and teachers to work during the summer in an atmosphere offering an ideal opportunity to learn about Iowa's unique natural beauty.

By 1931, additional acquisitions had increased the area to its present size of 130 acres (Bovbjerg, Ulmer and Downey 1974). Included in this beautifully preserved parcel of Iowa's natural heritage is a 40-acre mixed grass prairie, forest, bog, marshes and undeveloped shoreline with a small, secluded bay. Additionally, nearby natural prairies, sloughs, fens

and unique glacial topographical features complement the field station and are used extensively by the researchers and students.

When it was learned in the fall of 1991 that Lakeside Lab had been targeted for elimination in 1992 due to budget cuts, the people who had been affected by the program made themselves heard as they supported the continuation of funding for the facility. The Board of Regents was inundated with hundreds of letters written by former students from across the country and abroad. In December of that year, the Regents voted unanimously to reject a university study committee's recommendation that classes at Lakeside Laboratory be suspended. The Regents agreed with the opinions of professionals, students and residents of the area that the Laboratory's program was much too valuable and unique to drop from the university's course offerings. Although the issue of funding for the laboratory is still under scrutiny by a university committee, the endorsement from the Board of Regents makes the outlook fairly optimistic.

Since its establishment, Lakeside Laboratory has hosted hundreds of researchers and thousands of students. Since 1950, approximately 2000 students have studied at the field station, averaging nearly 100 each summer during the 1980s. For the past few years, average summer attendance has been about 50 students.

Research in the areas of prairie ecology, freshwater ecology, invertebrate ecology, natural history, ornithology, entomology, mycology and diatom systematics has been going on for decades at Lakeside, attracting well-known scientists not only from Iowa but from all parts of the United States, and students from such diverse places as Sweden, Lebanon and Indonesia.

Science teachers have a unique opportunity to take advantage of this valuable resource and to earn graduate science credit from any of the three state universities in the process. Each summer, two five-week sessions are presented at Lakeside Lab, each offering participants five hours of credit.

Classes are small, generally five students per course. Each course is taught by a research scientist and involves complete immersion in the subject area. The classes meet daily, and studies are ongoing with a break for lunch. Many students continue their studies into the evening hours at the lab, in the on-site library or in the field. It is not unusual to find students gathering microhabitat data around the clock. No other academic setting in Iowa offers such an opportunity. Graduate and undergraduate students work side-by-side with eminent professors, enjoying an intimate working relationship which is not usually found on college campuses.

All materials and equipment are conveniently available to researchers and students, as is the laboratory's library. Classes meet in the field as well as in the cabin classrooms. Students find themselves learning techniques such as those involved in controlled prairie burns, live trapping of small mammals for population studies, identification of spiders, native grasses or freshwater invertebrates, population dynamics and the analysis of plant and animal interactions. In addition, many students design and implement their own research studies, culminating in papers worthy of publication in science periodicals.

Students live at Lakeside, staying in cabins and eating at the on-site dining facility. It is not unusual for the families of students and professors to join them, staying in the laboratory's cabins as space permits.

Many, if not most, science teachers have never had the opportunity to do actual research in their academic preparation. Nearly all college level science courses are fact-dissemination, theoretical, or (if laboratory oriented) merely verification-type exercises which do not effectively illustrate the processes involved in scientific research. The result is a perpetuation of this type of "science" in the K-12 classroom, which does little toward developing an understanding of the real nature of science. "Lakeside Laboratory classes provide an opportunity for students to put information from lectures into real world situations and to learn from their own observations and experiments," said Dr. Lois Tiffany, Professor of Botany and Plant Pathology at Iowa State University.

At Lakeside Lab, the student is involved in *new* activities. Not only is the approach scientific in nature, but the findings are unique. Thus, the student becomes a discoverer of information and new knowledge. Imagine doing something that no one has done before and making discoveries that increase knowledge of a particular area of study! The result is an exciting appreciation for how science "works," and students leave Lakeside Lab with an exhilaration not experienced in a traditional class.

Science teachers thus have the opportunity to make a strong impact on the way their own students perceive science. Armed with this new understanding and with great enthusiasm, teachers can introduce to their science students an exciting way to view the world. The result is that pre-college students have a better understanding of the scientific process, greater science literacy and an enthusiasm for science in general. Equally important is the more specific outcome of the Lakeside experience: a better understanding of ecological relationships which enables teachers to

help their own students become more aware of the pressing ecological problems facing humanity on a global scale.

Although Lakeside Lab may appear to be geared for teachers of the biological sciences, teachers in other disciplines also benefit from this experience. Because of its research-based emphasis, a better understanding and appreciation of the scientific enterprise in general can be attained. The interdisciplinary nature of the sciences is also realized by teachers in the physical and earth sciences, and concepts can be better applied in new ways. These include, for example, the aerodynamics of flight; effects of temperature, pH, barometric pressure, humidity and light; biochemistry; the effects of fire; the chemistry of flower and pollinator; the unique geological environment of the kettle moraine area of north central Iowa and many more, including practical applications of mathematical concepts in evaluating data.

For many years, nearly half of the participants have been science education majors. As Robert Cruden, Professor of Botany at the University of Iowa and Acting Director of Lakeside Laboratory for three years states, "What science teachers take away from their Lakeside experience will undoubtedly make them better teachers. They can't possibly lose by taking one or more classes at Lakeside Laboratory."

John Penick, Professor and Department Chair of Science Education at the University of Iowa agrees with Cruden, noting "Lakeside Lab has always been viewed by faculty in science education as a valuable part of the education of outstanding science teachers at [the University of Iowa]."

Due to minimal advertising, Lakeside Lab has been a tradition known mainly to students at the state universities. Science teachers from Iowa and other states generally have heard about the program by word-of-mouth. Now, however, more practicing teachers are learning about the value and excitement of research-oriented field classes in Iowa.

For teachers who are interested in learning research techniques, broadening their knowledge of biology, doing field work with well-known biologists or simply bettering their understanding of how science works, Lakeside Lab offers the perfect opportunity. For information regarding future sessions at the Lakeside Lab, contact Dr. Robert Cruden, Department of Botany, Chemistry-Botany Building, University of Iowa, Iowa City, IA 52242.

References

Bovbjerg, R. W., M. J. Ulmer, and J. C. Downey. 1974. *The Iowa Lakeside Laboratory: Its past, present and potentials for the future.* Okoboji, IA: Lakeside Laboratory.

Zieglowsky, D. J. 1985. Thomas MacBride's dream: Iowa Lakeside Laboratory. *The Palimpsest* 66(2):42-65.